

## SUBSTITUTE SPECIFICATION

Method for Determining Tribological Properties of a Sample Surface Using an Atomic Force Scanning Microscope and an Atomic Force Scanning Microscope Therefor

## BACKGROUND OF THE INVENTION

## Field of the Invention

**[0001]** The present invention relates to a method for examining a sample surface using an atomic force scanning microscope comprising a cantilever with a longitudinal extension, along which the measuring tip is arranged precisely relative to a sample surface by means of a means for driving, the spatial position of the measuring tip being determined by a sensor unit. The microscope is further provided with at least one ultrasound generator with which vibration excitation is initiated at a given excitation frequency between the sample surface and the cantilever. The measuring tip of the cantilever is brought into contact with the sample surface in such a manner that the oscillations imparted to the measuring tip are oriented lateral to the sample surface and perpendicular to the length of the cantilever. The torsional vibrations induced in the cantilever are detected and analyzed by means of an evaluation unit.

## Description of the Prior Art

**[0002]** The development of an atomic force scanning microscope has permitted major achievements in the field of examination of surface properties, in particular in the characterization of surface properties. For the first time, it is possible to obtain information concerning surfaces and areas close to the surface of very different samples in nanometer resolution even in the magnitude of single atoms. Friction force microscopy, a further development of the atomic force scanning microscope, permitted for the first time studying one of the oldest problems in science, the examination of friction, on this scale.

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